



MOD : MA25/B5-R2V

Production code : BK250PBCND97H

10/2025

EV3 L series



Controllers for refrigerated cabinets, counters and islands



E ENGLISH

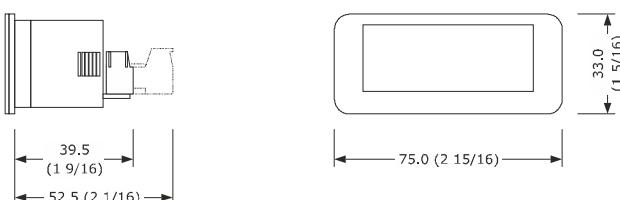
- Controllers for normal and low temperature units.
- Power supply 115 or 230 VAC (according to the model).
- Cabinet probe and evaporator probe (NTC).
- Door switch input.
- Compressor relay 16 A res. @ 250 VAC.

| Purchasing code | Relays | Probes (NTC) | Power supply |
|-----------------|--------|--------------|--------------|
| EV3L21N5 | 1 | 1 | 115 VAC |
| EV3L21N7 | 1 | 1 | 230 VAC |
| EV3L22N5 | 2 | 2 | 115 VAC |
| EV3L22N7 | 2 | 2 | 230 VAC |
| EV3L23N5 | 3 | 2 | 115 VAC |
| EV3L23N7 | 3 | 2 | 230 VAC |

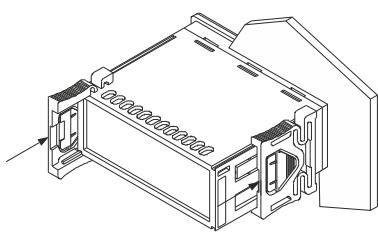
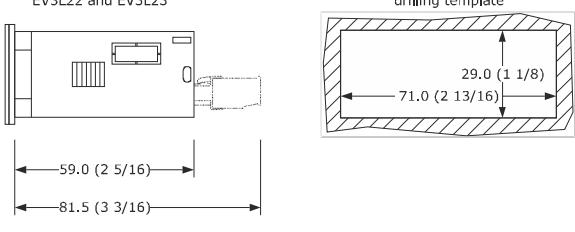
1 MEASUREMENTS AND INSTALLATION

Measurements in mm (inches). To be fitted to a panel, snap-in brackets provided.

EV3L21



EV3L22 and EV3L23



INSTALLATION PRECAUTIONS

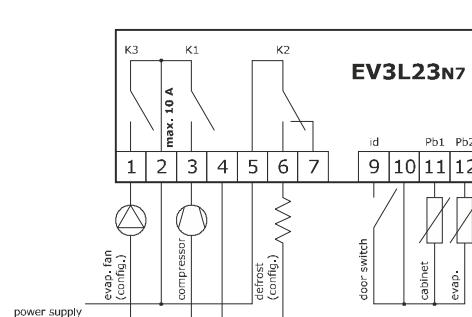
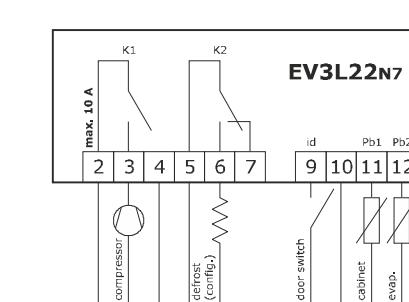
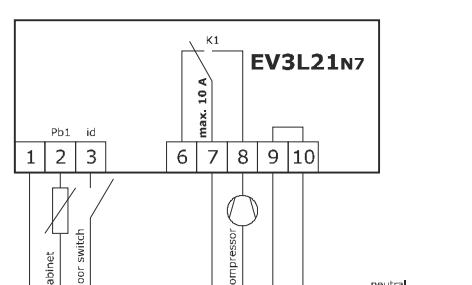
- The thickness of the panel must be between 0.8 and 2.0 mm (1/32 and 1/16 in)
- Ensure that the working conditions are within the limits stated in the *TECHNICAL SPECIFICATIONS* section.
- Do not install the device close to heat sources, equipment with a strong magnetic field, in places subject to direct sunlight, rain, damp, excessive dust, mechanical vibrations or shocks.
- In compliance with safety regulations, the device must be installed properly to ensure adequate protection from contact with electrical parts. All protective parts must be fixed in such a way as to need the aid of a tool to remove them.

2 ELECTRICAL CONNECTION



N.B.

- Use cables of an adequate section for the current running through them.
- To reduce any electromagnetic interference connect the power cables as far away as possible from the signal cables.



PRECAUTIONS FOR ELECTRICAL CONNECTION

- If using an electrical or pneumatic screwdriver, adjust the tightening torque.
- If the device has been moved from a cold to a warm place, the humidity may have caused condensation to form inside. Wait about an hour before switching on the power.
- Make sure that the supply voltage, electrical frequency and power are within the set limits. See the section *TECHNICAL SPECIFICATIONS*.
- Disconnect the power supply before doing any type of maintenance.
- Do not use the device as safety device.
- For repairs and for further information, contact the EVCO sales network.

3 FIRST-TIME

- Install following the instructions given in the section *MEASUREMENTS AND INSTALLATION*.
- Power up the device as shown in the section *ELECTRICAL CONNECTION* and an internal test will be run.
- The test normally takes a few seconds, when it is finished the display will switch off.

Configure the device as shown in the section *Setting configuration parameters*.

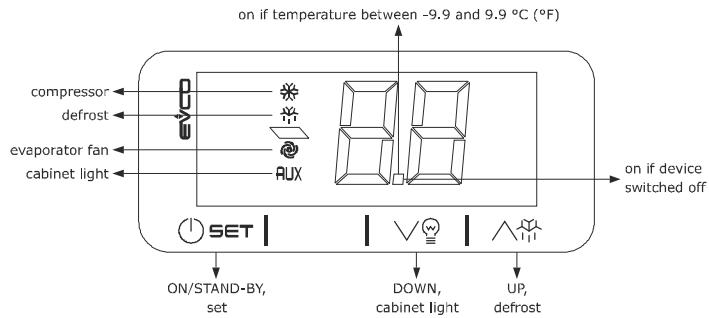
Recommended configuration parameters for first-time use.

| PAR. | DEF. | PARAMETER | MIN... MAX. |
|------|------|---------------------------------|--------------------------|
| SP | 0 | setpoint | r1... r2 |
| P2 | 0 | temperature unit of measurement | 0 = °C 1 = °F |
| d1 | 0 | defrost type | 0 = electric 1 = hot gas |

Then check that the remaining settings are appropriate; see the section *CONFIGURATION PARAMETERS*.

- Disconnect the device from the mains.
- Make the electrical connection as shown in the section *ELECTRICAL CONNECTION* without powering up the device.
- Power up the device.

4 USER INTERFACE AND MAIN FUNCTIONS



4.1 Switching the device on/off

- || SET | Touch the ON/STAND-BY key for 3 s.

If the device is switched on, the display will show the cabinet temperature; if the display shows an alarm code, see the section *ALARMS*.

| LED | ON | OFF | FLASHING |
|-----|-------------------|--------------------|---|
| | compressor on | compressor off | - compressor protection active - setpoint setting active |
| | defrost active | - | - defrost delay active - dripping active |
| | evaporator fan on | evaporator fan off | evaporator fan stop active |
| AUX | cabinet light on | cabinet light off | cabinet light on by digital input |

If 30 s have elapsed without the keys being pressed, the display will show the "Lo" label and the keypad will lock automatically.

4.2 Unlock keypad

Touch a key for 3 s: the display will show the label "Un".

4.3 Set the setpoint

Check that the keypad is not locked.

- || SET | Touch the ON/STAND-BY key.
- || SET | Touch the UP or DOWN key within 30 s to set the value within the limits r1 and r2 (default -40... 50°).
- || SET | Touch the ON/STAND-BY key (or do not operate for 30 s).

4.4 Activate manual defrost

Check that the keypad is not locked.

- || SET | Touch the UP key for 3 s.

If P4 = 1 (default), defrost is activated provided that the evaporator temperature is lower than the d2 threshold.

4.5 Cabinet light on/off (if u1 or u2 = 2)

- || SET | Touch the DOWN key.

5 ADDITIONAL FUNCTIONS

5.1 View the evaporator temperature

Check that the keypad is not locked.

- || SET | Touch the DOWN key for 4 s.
- || SET | Touch the ON/STAND-BY key (or do not operate for 30 s) to exit the procedure.

6 SETTINGS

6.1 Setting configuration parameters

Check that the device is switched on and the keypad is not locked.

- || SET | Touch the ON/STAND-BY key for 6 s: once 3 s have elapsed the display will switch off, once 6 s have elapsed the display will show the label "PA".
- || SET | Touch the ON/STAND-BY key again.
- || SET | Touch the UP or DOWN key within 30 s to set the PS value (default -19°).
- || SET | Touch the ON/STAND-BY key: the display will show the label "SP".
- || SET | Touch the UP or DOWN key to select a parameter.
- || SET | Touch the ON/STAND-BY key.
- || SET | Touch the ON/STAND-BY key for 3 s (or do not operate for 30 s) to exit the procedure.

6.2 Restore the factory settings (default) and store customized settings as default



- N.B.
- Check that the factory settings are appropriate; see the section *CONFIGURATION PARAMETERS*.
- the storing of customized settings overwrites the default.

Check that the device is switched on and the keypad is not locked.

- || SET | Touch the ON/STAND-BY key for 6 s: once 3 s have elapsed the display will show the label "PA".
- || SET | Touch the ON/STAND-BY key again.
- || SET | Touch the UP or DOWN key within 30 s to set "49".
- || SET | Touch the ON/STAND-BY key again: the display will show the label "dF".
- || SET | Touch the ON/STAND-BY key again.
- || SET | Touch the UP or DOWN key within 30 s to set the value.
- || SET | Touch the SET key: the device will exit the procedure.
- || SET | Touch the SET key 2 s before action 6. (or do not operate for 30 s) to exit the procedure beforehand.

7 CONFIGURATION PARAMETERS



| N. | PAR. | DEF. | SETPOINT | MIN... MAX. |
|----|------|------|----------|-------------|
| 1 | SP | 2 | setpoint | r1... r2 |

| N. | PAR. | DEF. | ANALOGUE INPUTS | MIN... MAX. |
|----|------|------|----------------------|----------------|
| 2 | o1 | 0 | cabinet probe offset | -99... 99 °C/F |

| N. | PAR. | DEF. | temperature unit of measurement | 0 = °C 1 = °F |
|----|------|------|---------------------------------|---------------|
| 4 | P2 | 0 | | |

| N. | PAR. | DEF. | enable evaporator probe | 0 = no 1 = yes |
|----|------|------|-------------------------|----------------|
| 5 | P4 | 1 | | |

| N. | PAR. | DEF. | filter for cabinet temperature display | 1... 10 1 = quick 4 = normal 7 = slow 10 = very slow |
|----|------|------|--|--|
| 6 | P8 | 4 | | |

| N. | PAR. | DEF. | REGULATION | MIN... MAX. |
|----|------|------|-----------------------|-------------------------|
| 7 | r0 | -2 | setpoint differential | -99... 0 °C/F symmetric |
| 8 | r1 | -40 | minimum setpoint | -99... 99 °C/F |
| 9 | r2 | 50 | maximum setpoint | -99... 99 °C/F |

8 ALARMS

| COD. | DESCRIPTION | RESET | REMEDIES |
|------|------------------------|-----------|--|
| P1 | cabinet probe alarm | automatic | - check probe integrity - check electrical connection |
| P2 | evaporator probe alarm | automatic | |
| AL | low temperature alarm | automatic | check A1 |
| AH | high temperature alarm | automatic | check A4 |
| id | open door alarm | automatic | check I0 e I1 |

9 TECHNICAL SPECIFICATIONS

| | | | | | |
|---|---|---|--|--|--|
| Purpose of the control device | Function controller | | | | |
| Construction of the control device | Built-in electronic device | | | | |
| Container | Black, self-extinguishing | | | | |
| Category of heat and fire resistance | D | | | | |
| Measurements | | | | | |
| With fixed screw terminal blocks: 75.0 x 33.0 x 39.5 mm (2 15/16 x 1 5/16 x 1 9/16 in) for EV3L21, 75.0 x 33.0 x 59.0 mm (2 15/16 x 1 5/16 x 2 5/16 in) otherwise | With removable screw terminal blocks: 75.0 x 33.0 x 52.5 mm (2 15/16 x 1 5/16 x 2 1/16 in) for EV3L21, 75.0 x 33.0 x 81.5 mm (2 15/16 x 1 5/16 x 3 3/16 in) otherwise | | | | |
| Mounting methods for the control device | To be fitted to a panel, snap-in brackets provided | | | | |
| Degree of protection provided by the covering | IP65 (front) | | | | |
| Connection method | | | | | |
| Fixed screw terminal blocks for wires up to 2,5 mm ² | Removable screw terminal blocks for wires up to 2,5 mm ² ; by request | | | | |
| Maximum permitted length for connection cables | | | | | |
| Power supply: 10 m (32.8 ft) | Analogue inputs: 10 m (32.8 ft) | | | | |
| Digital inputs: 10 m (32.8 ft) | Digital outputs: 10 m (32.8 ft) | | | | |
| Operating temperature | From 0 to 55 °C (from 32 to 131 °F) | | | | |
| Storage temperature | From -25 to 70 °C (from -13 to 158 °F) | | | | |
| Operating humidity | Relative humidity without condensate from 10 to 90 % | | | | |
| Pollution status of the control device | 2 | | | | |
| Conformity | | | | | |
| RoHS 2011/65/CE | WEEE 2012/19/EU | REACH (EC) Regulation 1907/2006 | | | |
| EMC 2014/30/UE | LVD 2014/35/UE | | | | |
| Power supply | 230 VAC (+10% -15%), 50/60 Hz (±3 Hz), max. 3 VA isolated | | | | |
| Earthing methods for the control device | None | | | | |
| Rated impulse-withstand voltage | 4 KV | | | | |
| Over-voltage category | III | | | | |
| Software class and structure | A | | | | |
| Analogue inputs | - 1 in EV3L21 (cabinet probe) - 2 in EV3L22 and EV3L23 (cabinet probe and evaporator probe) for NTC probes | | | | |
| NTC probes | Sensor type | B3435 (10 KΩ @ 25 °C, 77 °F) | | | |
| | Measurement field | From -40 to 90 °C (from -40 to 194 °F) | | | |
| | Resolution | - 0.1 °C (0.1 °F) between -9.9 and 9.9 - 1 °C (1 °F) otherwise | | | |
| Digital inputs | 1 dry contact (door switch) | | | | |
| Dry contact | Contact type | 5 VDC, 1.5 mA | | | |
| | Protection | None | | | |
| Digital outputs | - 1 in EV3L21 (K1) - 2 in EV3L22 (K1 and K2) - 3 in EV3L23 (K1, K2 and K3) electro-mechanical relays | | | | |
| | The maximum current allowed on the loads is 10 A | | | | |
| Relay K1 (compressor): | SPST, 16 A res. @ 250 VAC | | | | |
| Relay K2 (auxiliary output 1, default defrost): | SPDT, 8 A res. @ 250 VAC | | | | |
| Relay K3 (auxiliary output 2, default evaporator fan): | SPST, 5 A res. @ 250 VAC | | | | |
| Type 1 or Type 2 Actions | Type 1 | | | | |
| Additional features of Type 1 or Type 2 actions | C | | | | |
| Displays | 2 digits custom display 17 mm (11/16 in) high, with function icons | | | | |



N.B.

The device must be disposed of according to local regulations governing the collection of electrical and electronic waste.

This document and the solutions contained therein are the intellectual property of EVCO and thus protected by the Italian Intellectual Property Rights Code (CPI). EVCO imposes an absolute ban on the full or partial reproduction and disclosure of the content other than with the express approval of EVCO. The customer (manufacturer, installer or end-user) assumes all responsibility for the configuration of the device. EVCO accepts no liability for any possible errors in this document and reserves the right to make any changes, at any time without prejudice to the essential functional and safety features of the equipment.